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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,254	08/18/2003	Kevin Crather	CL1610USNA	4632

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EXAMINER	
BODAWALA, DIMPLE N	

ART UNIT	PAPER NUMBER
1722	

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05/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/643,254	CRATHER ET AL.	
	Examiner	Art Unit	
	Dimple N. Bodawala	1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,12,14,16,18,20-22,24,26,28-35,39,40 and 42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12,14,16,18,20-22,24,26,28-35,39-40, and 42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 26th, 2007 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 10, 12, 14, 16, 18, 20-22, 24, 26, 30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerhold et al. (U S Patent No. 2,467,470) in view of Guill (U S Patent No. 3,029,466).

Gerhold ('470) discloses an apparatus for manufacturing of the spherical particles which comprises the housing (1) having a wall and a cavity; two inlet ports (2 and 3) in the wall of the housing for introducing a suspension and biocatalyst into the

housing cavity; and mixing device (4 and 5) within the housing cavity for mixing the catalyst with the suspension (See figure 1, col.3 lines 60-73). It further comprises the driven shaft (9) contained within the housing cavity, wherein the shaft (9) is rotatably mounted in the housing cavity, wherein the mixing device (4,5) within the housing cavity is driven by the shaft (9) (See figure 1, col.3 lines 67-73). Furthermore, it comprises the mixing device is the group consisting of mechanical mixers (See col.3 line 68).

Gerhold ('470) discloses all claimed structural limitations as discussed above, but does not disclose the extrusion die, cutting assembly and heating device.

In the analogous art, Guill ('466) discloses an extrusion die having a face (Fig 1, #22) with one or a plurality of extrusion holes (Fig 1, #23) through which the material can be extruded from the housing cavity, a cutting assembly (Fig 1) having at least one cutting blade (Fig 1, #36) that cuts the material into individual particles when the material exits the extrusion holes as the cutting blade moves across each extrusion hole, wherein the cutting blade is in close proximity with the face of the extrusion die and moves in a linear, rotating or reciprocating manner; the cutting assembly is rotatably mounted (Fig 1, #32); the extrusion die has a central opening and the

drive shaft extends through the central opening of the extrusion die and wherein the cutting assembly is rotatably mounted on the drive shaft as it extends through the central opening (Fig 1) (See col.3 lines 62-75 through col.4 lines 1 - 16).

It further teaches that the extrusion holes are uniformly spaced apart on the face of the extrusion die (Fig 1), the extrusion holes are arranged in a circular array when the cutting assembly is rotatably mounted; the extrusion holes have a generally circular cross-section (Fig 1); the face of the extrusion die is treated with or is constructed from a material that has a high contact angle with the material, the material being selected from metals (Fig 1); the extrusion die is constructed from an insulating material selected from metals (Fig 1), the cutting assembly is selected from pitched turbines (Fig 5); the system is heated by at least one heating device (Fig 1 , #24); the heating device is selected from thermal mass heaters (Fig 1, #24).

It further discloses the mixing device within the housing cavity is driven by a rotatably mounted drive shaft and the extrusion die has a central opening through which the drive shaft extends and wherein the cutting assembly is rotatably mounted on the drive shaft where it extends through the central opening (Fig 1); a plurality of mixing blades (36') for mixing

the quench fluid as the cutting assembly rotates in the quench fluid; the quench station further has an inclined surface for collecting the particles and at least one additional collection reservoir for collecting the quench fluid as the quench fluid exits the quench station, wherein the quench fluid is recycled back from the additional collection reservoir into the quench station after the hydro gel particles are collected on the inclined surface (Fig 1) (See col.5 lines 13 - 55).

It would have been obvious to one having ordinary skill in the art at the time of the Applicant's invention to modify the invention of Gerhold with the features of Guill because such additional devices would be obvious and enable the structural limitation and function of producing the particles (See col.1 lines 44-49).

Claims 2-9,28-29,31,33-35, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerhold et al. (U S Patent No. 2,467,470) in view of Guill (U S Patent No. 3,029,466) as applied to claims 1, 10, 12, 14, 16, 18, 20-22, 24, 26, 30, and 32 above, and further in view of Nash (U S Patent No. 2,254,237).

Gerhold ('470) and/or Guill ('466) disclose all claimed structural limitations as discussed above including extruding material through the apparatus and cutting the material.

However, Gerhold ('470) and/or Guill ('466) fail to teach the feed and metering stations as well as transfer lines and mixing stations.

Nash ('237) discloses figure 1 with the feed station (32,42,72) for containing the material. Figure further comprises the first metering device (37), and the second metering device (48) having transfer lines (35,47) connected to the feed station, and a quench station containing quench fluid (Fig 1, #12); and also to the hydro gel forming particle apparatus for receiving material from the feed station and delivering it to the apparatus. It further teaches the metering device is a volumetric metering pump (Fig 1, #37 and #48).

Nash ('237) teaches a mixing device for mixing components before submitted to the apparatus (Fig 1, #78), the mixing device is part of the feed station and

part of the transfer line of the metering device; further comprising an additional feed station (Fig 1, #62) for containing fluid and a metering device (Fig 1, #68); and the internal pump within the housing cavity is a volumetric displacement pump. The prior arts disclose all structural limitations of the system which essentially disclose the sequential step of method for producing hydrogel particles such as providing feed station, metering the suspension and

biocatalyst, mixing the suspension and biocatalyst, and also cutting the extruded suspension.

It would have been obvious to one having ordinary skill in the art at the time of the Applicant's invention to modify the invention of Gerhold and/or Guill with the features of Nash because such additional devices would be obvious and enable the structural limitation and function of producing the particles (See col.1 lines 1 - 9).

Claims 39, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerhold et al. (U S Patent No. 2,467,470) in view of Guill (U S Patent No. 3,029,466) further in view of Nash (U S Patent No. 2,254,237) as applied to claims 1-10, 12, 14, 16, 18, 20-22, 24, 26, 28-35, and 40 above, and further in view of Kahlert et al. (U S Patent No. 4,639,423).

Gerhold ('470), Guill ('466) and/or Nash ('237) disclose all structural limitations as discussed above providing the method step for manufacturing particles by providing all structural elements. However, they fail to teach the group of biocatalyst which is involved with system and method.

In the analogous art, Kahlert ('423) discloses the apparatus partially submerged in quench fluid (fig 1); the hydro gel forming suspension has a hydro gel solution and a

biocatalyst; the biocatalyst being multi enzymes complexes (Col.4 lines 24-46).

It would have been obvious to one having ordinary skill in the art at the time of the Applicant's invention to modify the invention of Gerhold, Guill and/or Nash to provide the biocatalyst as set forth by Kahlert because such an alignment enables the production of hydro gel particles including the biocatalysts and are found to be useful for production of particles.

Response to Arguments

Applicant's arguments with respect to claims 1 and 40 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dimple N. Bodawala whose telephone number is (571) 272-6455. The examiner can normally be reached on Monday - Friday at 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra N. Gupta can be reached on (571) 272-1316. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

YOGENDRA N. GUPTA
SUPERVISORY PATENT EXAMINER
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